

Work Order ID 144447

144447

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Monday, April 18, 2016 12:44:36 PM

Item ID: D6011-115

Accept

N900040100

Setup Start *NS1*

Revision ID:

Stop *NS2*

Item Name: Crosstube Material

Start Date: 4/18/2016 Start Qty: 9.00

9

Cust Item ID:

Required Date: 4/28/2016 Req'd Qty: 9.00

9

Customer:

Reference:

Approvals: Process Plan:  Date: _____ Tooling: _____ Date: _____
QC: _____ Date: _____ SPC (Y/N): _____ Date: _____

Run Start *NR1*

Stop *NR2*

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
Draw Nbr	Revision Nbr								
D6011	Rev A1								

100

0.00

100

PURCHASING

Purchasing

Memo

0.00

Purchasing

Issue P/O: 32097

a) Order as per Dwg D6011

b) Material: 2.750 x 0.650 wall 7075-T6/T6511 (WW-T-700/7 or QQ-A-225/9 or QQ-A-200/11) seamless aluminum tube

c) Minimum ultimate tensile strength = 77 ksi

d) Minimum tensile yield strength = 66 ksi

e) Material cert's is required

EXTREME CARE MUST BE TAKEN TO PROTECT THE OUTSIDE SURFACE OF THE TUBE. THE OUTSIDE SURFACE MUST BE SMOOTH AND FREE FROM SURFACE DEFECTS SUCH AS SCRATCHES, NICKS, OR DENTS.

MUST BE WELL PACKAGE, IF NOT IT WILL BE REFUSE

9

APR 20 2016

DAS

13

9-89

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Item ID: D6011-115

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Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____
QC: _____ Date: _____ SPC (Y/N): _____ Date: _____

Run Start ***NR1***Stop ***NR2***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
110	Receive & Inspect for Damage & Mat'l Certs	0.00							
110									
Packaging	Memo	0.18							
Packaging	Ensure material certification is attached								
120	QC6- Inspect dimensions to drawing	0.00							
120									
QC	Memo	0.00							
Quality Control	Ensure Material certification comply to Dwg								
140	Identify as per dwg & Stock Location: LG003	0.00							
140									
Packaging	Memo	0.09							
Packaging	LOCATION : LG003								

9x 80/6-0511

⑨ 16-05-18 DAS 9 9-89

x9 [Signature] 16/28/6

Work Order ID 144447***144447***

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Monday, April 18, 2016 12:44:36 PM

Item ID: D6011-115 Accept ***N900040100*** Setup Start ***NS1***
Revision ID: Stop ***NS2***
Item Name: Crosstube Material
Start Date: 4/18/2016 Start Qty: 9.00 ***9*** Cust Item ID:
Required Date: 4/28/2016 Req'd Qty: 9.00 ***9*** Customer:
Reference:

Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____ Run Start ***NR1***
QC: _____ Date: _____ SPC (Y/N): _____ Date: _____ Stop ***NR2***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
150	QC21- Final Inspection - Work Order Release	0.00							
150									
QC	Memo	0.90							
Quality Control									

16/6/29 *[Signature]*

SW 6/29/16

Picklist Print

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Work Order ID: 144447

144447

Parent Item: D6011-115

D6011-115

Parent Item Name: Crosstube Material

Start Date: 4/18/2016

Required Date: 4/28/2016

Start Qty: 9.00

Required Qty: 9.00

Comments: IPP Rev:A01.08.17New IssueSM
IPP rev B 07.09.18 rev A1 dwg EC verified by:JLM

Component Item ID/ Item Name	Replacement Item ID	Mfg/ Purch	Bin Item	Primary Location	Last Location	Route Seq ID	Unit of Measure	Qty on Hand	Qty per Kit	Total Qty	Qty Issued	Date Issued	Status
---------------------------------	------------------------	---------------	-------------	---------------------	------------------	-----------------	--------------------	----------------	-------------	--------------	---------------	----------------	--------

D6011-115P

Purchased

No

100

Each

0.0000

1

9

D6011-115P

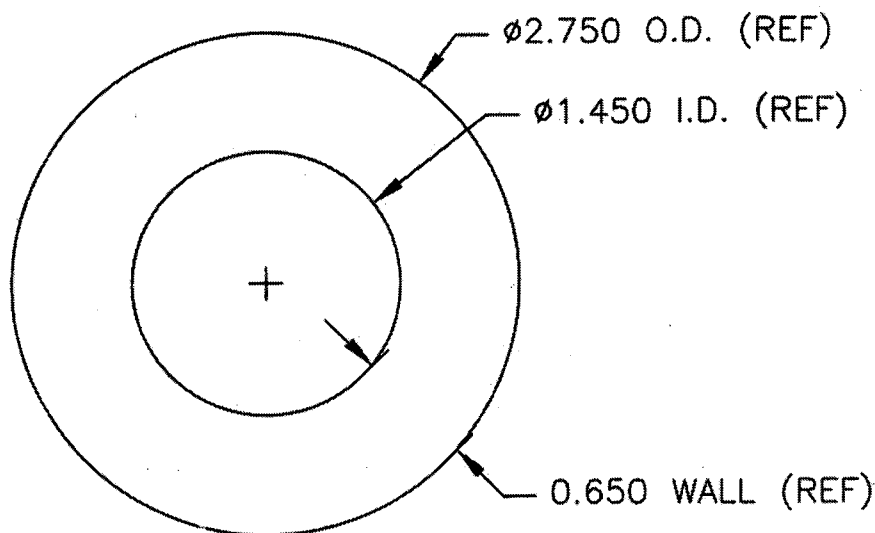
Crosstube Material

9x 8016-05-11

DART

DESIGN <i>[Signature]</i>	DRAWN BY <i>[Signature]</i>	DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA	
CHECKED <i>[Signature]</i>	APPROVED <i>[Signature]</i>	DRAWING NO. D6011	REV. A SHEET 1 OF 1
DATE 01.08.16		TITLE CROSSTUBE MATERIAL	SCALE 1:1
A	01.08.16	NEW ISSUE	
AI	01.08.16 02-01-29	UPDATE TOLERANCE ON OD.	

SPECIFICATION CONTROL DRAWING

RELEASED
01.08.17 *[Signature]**Handwritten: 1115*

NOTES

- 1) D6011-XXX CROSSTUBE
LENGTH

WHERE XXX IS LENGTH IN INCHES
EG. 115" LONG TUBE: D6011-115

- 2) MATERIAL: 2.750 OD x 0.650 WALL 7075-T6/T6511 (WW-T-700/7 OR QQ-A-225/9 OR QQ-A-200/11) SEAMLESS ALUMINUM TUBE.
MINIMUM ULTIMATE TENSILE STRENGTH = 77 ksi
MINIMUM YIELD TENSILE STRENGTH = 66 ksi
- 3) TOLERANCES ARE PER ~~ASTM B210 AS FOLLOWS~~ *ANSI H35.2 AS FOLLOWS* AI
O.D.: ~~± 0.006 MEAN (± 0.012 INCLUDING OVALITY)~~ ± 0.015 MEAN (± 0.030 INCL. OVALITY)
WALL: ± 0.020 MEAN (± 0.065 INCLUDING ECCENTRICITY)
LENGTH: XXX $+0.125/-0.000$
STRAIGHTNESS: 0.010 " DEVIATION / 12" LENGTH
- 4) EXTREME CARE MUST BE TAKEN TO PROTECT THE OUTSIDE SURFACE OF THE TUBE. THE OUTSIDE SURFACE MUST BE SMOOTH AND FREE FROM SURFACE DEFECTS SUCH AS SCRATCHES, NICKS, OR DENTS. DEFECTS UP TO 0.005" MAY BE BLENDED OUT LONGITUDINALLY. CIRCUMFERENTIAL GRIND MARKS ARE UNACCEPTABLE.
- 5) CHEMICAL CONVERSION COAT PER DART QSI 005 4.1

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Dart Aerospace Ltd.
1270 Aberdeen Street
Hawkesbury, ON K6A 1K7
Tel: 613 632 9577
Fax: 613 632 1053

PURCHASE ORDER

Purchase Order ID PO32097

Purchase Order Date 4/20/2016

PO Print Date 4/20/2016

Page Number 1 of 2

Order From :

VU-KAI001

Ship To : DART AEROSPACE LTD

KAISER ALUMINUM
6573 W WILLIS ROAD

1270 ABERDEEN
HAWKESBURY, ON K6A 1K7
CANADA

E-MAILED

APR 20 2016

CHANDLER, ARIZONA 85226
USA

Contact Name

Vendor Phone 520 796 1097 Ext.1020

Buyer

Chantal Lavoie

Customer POID

Customer Tax # 10127-2607

Ship To Contact

Terms

Net 30

Ship To Phone

Currency

USD

Ship Via:

Journey Freight collect

FOB

Destination-Collect

Ship Acct:

Line Nbr	Reference Vendor Part Number	Description/ Mfg ID	Req Date/ Taxable	CD	Req Qty/ Unit of Measure	PO Unit Price	Extended Price
	Line-Comments		Promise Date				
	Delivery Comments						
1	D6011-115P	Crosstube Material	4/28/2016 Yes 4/28/2016		9.00 Each	\$519.68	\$4,677.12
	EXTRUDE-AS PER DWG D6011-115 REV. A B144447						
						Line Total:	\$4,677.12
2	71401-45	PROCUREMENT QUALITY CLAUSES	4/28/2016 No 4/28/2016		1.00	\$0.00	\$0.00
	Procurement Quality Clauses A005 right of entry A012 chemical and physical test report A016 personnel qualification A017 raw material identification (as applicable) A026 certification of material conformance A041 quality management system A042 dart notification by supplier A043 retention of quality documents						

Note:

4/20/2016

05/02/16

KAISER ALUMINUM FABRICATED PRODUCTS, LLC
PACKING LIST

PAGE 1

KAISER ALUMINUM
6573 W. WILLIS ROAD
BOX 5011
CHANDLER AZ 85226

SOLD TO

DART AEROSPACE LTD
HAWKESBURY ON K6A 1K7

INSIDE SALES REP

FACIO

DART AEROSPACE LTD
1270 ABERDEEN
STREET

BILL OF LADING

221652

SHIP DATE

04/28/16

SHIPMENT NBR- 220551 0001

CARRIER

CUSTOMER PICKUP

LOAD NUMBER

JJ43

HAWKESBURY ON K6A 1K7

TOTAL GROSS WT

448 LBS.

SHIP ITEM RELEASE	ITEM	DESCRIPTION	P.O. NUMBER	LOT NUMBER	PACKAGE NUMBER	PACK PIECES	GROSS WGT	NET WGT	BACK ORDER	INHOUSE DATE
1 220551	001	SPIRIT-390353 70074 5.1971#/FT 4000 (3 7075 T6511 +49.80 +1/2 -0 115 IN +.1250 -.0000 TOL 7075 T6511 2.75"OD X .650" WALL HA EST	COMPLETE 32097	*70074-003 Dash 0001	M000120384	9 9	448	448	86.25	05/04/16
TOTAL:						9	448	448	86.24	
TOTAL NET WT							448	FOOTAGE	86.24	

* MATERIAL CERTIFICATION REQUIRED FOR THIS LOT NUMBER.

8816-0511

KAISER ALUMINUM FABRICATED PRODUCTS

CERTIFIED TEST REPORT

<http://Online.KaiserAluminum.com>

KAISER ALUMINUM
FABRICATED PRODUCTS, LLC
6573 W. WILLIS ROAD
CHANDLER, AZ 85226

CUSTOMER PO NUMBER: 32097-1		CUSTOMER PART NUMBER: SPIRIT-390353		PRODUCT DESCRIPTION: 7075 T6511 2.75 OD X .650 WALL HA EST	
KAISER ORDER NUMBER: 220551	LINE ITEM: 001	SHIP DATE: 04/28/2016	KAISER LOT NUMBER: 70074-003	ALLOY: 7075	TEMPER: T6511
WEIGHT SHIPPED: 448.000 LB	QUANTITY: 9.000 PCS	B/L NUMBER: 221652	DIAM/DAF/THKNS: 	WIDTH: 	LENGTH: 9.583 FT
SHIP TO: DART AEROSPACE LTD 1270 ABERDEEN STREET HAWKESBURY, ON K6A 1K7 CANADA			SOLD TO: DART AEROSPACE LTD 1270 ABERDEEN STREET HAWKESBURY, ON K6A 1K7 CANADA		

Actual Physical Properties

REFERENCE	DASH#	SAMPLE#	UTS (KSI)	YTS (KSI)	ELONG%	HARDNESS	CON%IACS	BEND
70074-003	0001	1	87.0	79.0	11.0	N/A	N/A	N/A

Chemical Composition (wt%), Aluminum Remainder

LIMITS	Si	Fe	Cu	Mn	Mg	Cr	Zn	Ti	Pb	Bi	Zr	Ea	Tot
Maximum	0.40	0.50	2.00	0.30	2.90	0.28	6.10	0.20	NA	NA	NA	0.05	0.15
Minimum	0.00	0.00	1.20	0.00	2.10	0.18	5.10	0.00	NA	NA	NA	0.00	0.00
57386	.09	.16	1.57	.02	2.41	.19	5.78	.03	.00	.00	.02	.01	.02

Applicable Requirements:

Description: ACTUAL CHEMISTRIES REQUIRED WITH THIS ITEM
AMS-QQ-A-200/11 Also conforms to **QQ-A-200/11**
No Weld Repair. Mercury Free.

Miscellaneous Notes

MANUFACTURED IN USA MELTED IN USA

CERTIFICATION

Kaiser Aluminum Fabricated Products, LLC ('Kaiser') hereby certifies that metal shipped under this order has been inspected and tested and found in conformance with the applicable specifications forming a part of the description set forth in Kaiser's sales acknowledgement form. Any warranty is limited to that shown on Kaiser's general terms & conditions of sale. Test reports are on file subject to examination.

Hans Kattentidt, Quality Manager



Plant Serial: 00021943

Kaiser Order Number: 220551

Line Item: 001

MATERIAL RECEIPT INSPECTION FORM

MATERIAL: B6011-115
DATE: 16-05-17

PO / BATCH NO.: B32097 / B144447

MATERIAL CERT REC'D: yes
QUANTITY RECEIVED: 9
QUANTITY INSPECTED: 9
QUANTITY REJECTED: 0

THICKNESS ORDERED: .650
THICKNESS RECEIVED: _____
SHEET SIZE ORDERED: N/A
SHEET SIZE RECEIVED: N/A

DESCRIPTION	NCR (Check Y/N)		COMMENTS
SURFACE DAMAGE	Y	☒	
CORRECT FINISH	☒	N	
CORROSION	Y	☒	
CORRECT GRAIN DIRECTION	☒	N	
CORRECT MATERIAL	☒	N	
CORRECT THICKNESS	☒	N	
PHOTO REQUIRED	Y	☒	
CORRECT MATERIAL	☒	N	QQ-A-200/11
CORRECT REF # TO LINK CERT	☒	N	32097-1
CORRECT MATERIAL IDENTIFICATION	☒	N	
CORRECT M# ON THE MATERIAL	☒	N	
DOES THIS MATERIAL REQUIRE ENGINEERING SIGN OFF	Y	☒	
DOES THIS REQUIRE AN EXTRUSION REPORT	Y	☒	

CUT SAMPLE PIECE OF MATERIAL AND PREFORM A HARDNESS CHECK. RECORD RESULTS BELOW					
TYPE OF MATERIAL SIZE OF TEST SAMPLE HARDNESS / DUROMETER READING	HRC	HRB	DUR A	DUR D	

testers located in the Quality Office

QC 18 INSPECTION		ENGINEERING SIGNOFF (if required)	
INSPECTED BY: <u>DAS</u> <u>9</u> <u>g.89</u>	SIGNED OFF BY: _____		
DATE: <u>16-05-16</u>	DATE: _____		

Attach this inspection sheet with the corresponding material cert and remit to be scanned and received in

MATERIAL RECEIPT INSPECTION FORM

INSTRUCTIONS FOR INSPECTING BAR, TUBING, ROUND, & SHEET STOCK

- 1- VERIFY STOCK TO DART PURCHASE ORDER
- 2- MEASURE ALL DIMENSIONS FOR EACH PURCHASED STOCK
 - a. WIDTH, THICKNESS, DIAMETER, WALL THICKNESS & LENGTH
- 3- VERIFY CONDITION OF MATERIAL i.e. DAMAGED, CORRODED, etc.
- 4- VERIFY THAT SUPPLIER HAS A NUMBER (HEAT #) ON ITS RECEIVING REPORT TO LINK TO MATERIAL CERTS
- 5- VERIFY MATERIAL CERTS ARE CORRECT TO THE DART PO INSTRUCTIONS
- 6- REMOVE / CUT A PIECE OF MATERIAL FOR SAMPLE HARDNESS TESTING

INSTRUCTIONS FOR INSPECTING SKIDTUBE & STEP EXTRUSION

- 1- VERIFY TO DART SUPPLIED DRAWING
- 2- SAMPLE INSPECT MATERIAL IN BUNDLE TO ENSURE MATERIAL CAN BE RECEIVED INTO DART
- 3- USING PORTABLE HARDNESS TESTER VERIFY HARDNESS OF THE MATERIAL TO THE DRAWING
- 4- VERIFY THAT MATERIAL CERTS MATCH TO WHATS CALLED UP ON THE DART DRAWING

AFTER MATERIAL PASSES INSPECTION

- 5- HAVE DART EMPLOYEES START STOCKING MATERIAL BUT REQUEST MIN **20pcs** FOR FULL INSPECTION
- 6- INSPECT ALL DIMS AS PER DRAWING REQUIREMENTS

INSTRUCTIONS FOR INSPECTING CROSS TUBE MATERIAL

- 1- VERIFY MATERIAL CERTS MATCH THE REQUIREMENTS ON THE DART DRAWINGS
- 2- INSPECT MIN. HALF THE BATCH OF EXTRUSION RECEIVED INTO DART
- 3- INSPECT MATERIAL AS PER THE EXTRUSION REPORT
 - a. WALL THICKNESS USING ULTRA-SONIC IN 4 LOCATIONS
 - b. OUTSIDE DIAMETER HIGHEST/LOWEST BOTH ENDS
 - c. INSIDE DIAMETER HIGHEST/LOWEST BOTH ENDS
 - d. STRAIGHTNESS @ CENTER OVER 12" SPAN
 - e. WALL THICKNESS USING TUBE MICROMETER HIGHEST/LOWEST BOTH ENDS
- 4- IDENTIFY EACH TUBE IN SEQUENCE OF INSPECTING (TUBE 1, TUBE2.....) AND W/O# AND PO#
- 5- RECORD ALL FINDINGS ON EXTRUSION REPORT

IF ANY QUESTIONS PLEASE SEE QC COORDINATOR BEFORE GOING FURTHER

EXTRUSION INSPECTION SHEET



TUBE #	TOTAL LENGTH	SIDE A		SIDE B		Measurement unit		Inches	Symbol	"	ULTRA SONIC MEASUREMENTS						
		DIA		DIA		INSIDE DIA	wall thickness measured w/vern				Strightness at 12" in middle	Rockwell Reading	LOCATION on tube	R1	R2	R3	R4
		R1	R2	R1	R2												
DWG										N/A	Middle	N/A					
1	115	2.742	2.745	2.746	2.743	1.455	641	649	.002	N/A	Middle	.654	.651	.646	.646		
2	115	2.747	2.751	2.743	2.750	1.454	645	650	.006	N/A	Middle	.652	.653	.650	.643		
3	115	2.743	2.750	2.749 2.750	2.755	1.449	647	652	.007	N/A	Middle	.652	.643	.654	.651		
4	115	2.740	2.745	2.745	2.750	1.457	646	643	.003	N/A	Middle	.651	.649	.646	.649		
5										N/A	Middle						
6										N/A	Middle						
7										N/A	Middle						
8										N/A	Middle						
9										N/A	Middle						
10										N/A	Middle						
11										N/A	Middle						
12										N/A	Middle						
13										N/A	Middle						
14										N/A	Middle						
15										N/A	Middle						
16										N/A	Middle						
PART #		D6011-115				P/O#		32097		BATCH #		144447		Notes:			